

**§ 63.490 Batch front-end process vents—performance test methods and procedures to determine compliance.**

(a) *Use of a flare.* When a flare is used to comply with § 63.487(a)(1) or § 63.487(b)(1), the owner or operator shall comply with the flare provisions in § 63.11(b) of subpart A.

(b) *Exceptions to performance tests.* An owner or operator is not required to conduct a performance test when a control device specified in paragraphs (b)(1) through (b)(4) of this section is used to comply with § 63.487(a)(2).

(1) A boiler or process heater with a design heat input capacity of 44 megawatts or greater.

(2) A boiler or process heater where the vent stream is introduced with the primary fuel or is used as the primary fuel.

(3) A control device for which a performance test was conducted for determining compliance with a new source performance standard (NSPS) and the test was conducted using the same procedures specified in this section and no process changes have been made since the test.

(4) A boiler or process heater burning hazardous waste for which the owner or operator:

(i) Has been issued a final permit under 40 CFR part 270 and complies with the requirements of 40 CFR part 266, subpart H; or

(ii) Has certified compliance with the interim status requirements of 40 CFR part 266, subpart H.

(5) An incinerator burning hazardous waste for which the owner or operator complies with the requirements of 40 CFR part 264, subpart O.

(6) Performance tests done for other subparts in part 60 or part 63 where total organic HAP or TOC was measured, provided that the owner or operator can demonstrate that operating conditions for the process and control device during the performance test are representative of current operating conditions.

(c) *Batch front-end process vent testing and procedures for compliance with § 63.487(a)(2).* Except as provided in paragraph (b) of this section, an owner or operator using a control device to comply with § 63.487(a)(2) shall conduct

a performance test using the procedures specified in paragraph (c)(1) of this section in order to determine the control efficiency of the control device. An owner or operator shall determine the percent reduction for the batch cycle using the control efficiency of the control device as specified in paragraphs (c)(2)(i) through (c)(2)(iii) of this section and the procedures specified in paragraph (c)(2) of this section. Compliance may be based on either total organic HAP or TOC. For purposes of this paragraph and all paragraphs that are part of paragraph (c) of this section, the term “batch emission episode” shall have the meaning “period of the batch emission episode selected for control,” which may be the entire batch emission episode or may only be a portion of the batch emission episode.

(1) Performance tests shall be conducted as specified in paragraphs (c)(1)(i) through (c)(1)(v) of this section.

(i) Except as specified in paragraph (c)(1)(i)(A) of this section, a test shall be performed for the entire period of each batch emission episode in the batch cycle that the owner or operator selects to control as part of achieving the required 90 percent emission reduction for the batch cycle specified in § 63.487(a)(2). Only one test is required for each batch emission episode selected by the owner or operator for control. The owner or operator shall follow the procedures listed in paragraphs (c)(1)(i)(B) through (c)(1)(i)(D) of this section.

(A) Alternatively, an owner or operator may choose to test only those periods of the batch emission episode during which the emission rate for the entire episode can be determined or during which the emissions are greater than the average emission rate of the batch emission episode. The owner or operator choosing either of these options must develop an emission profile for the entire batch emission episode, based on either process knowledge or test data collected, to demonstrate that test periods are representative. Examples of information that could constitute process knowledge include

calculations based on material balances and process stoichiometry. Previous test results may be used, provided the results are still relevant to the current batch front-end process vent conditions.

(B) Method 1 or 1A, as appropriate, shall be used for selection of the sampling sites if the flow measuring device is a pitot tube. No traverse is necessary when Method 2A or 2D is used to determine gas stream volumetric flow rate. Inlet sampling sites shall be located as specified in paragraphs (c)(1)(i)(B)(1) and (c)(1)(i)(B)(2) of this section. Outlet sampling sites shall be located at the outlet of the final control device prior to release to the atmosphere.

(1) The control device inlet sampling site shall be located at the exit from the batch unit operation before any control device. Section 63.488(a)(2) describes those recovery devices considered part of the unit operation. Inlet sampling sites would be after these specified recovery devices.

(2) If a batch process vent is introduced with the combustion air or as a secondary fuel into a boiler or process heater with a design capacity less than 44 megawatts, selection of the location of the inlet sampling sites shall ensure the measurement of total organic HAP

or TOC (minus methane and ethane) concentrations in all batch front-end process vents and primary and secondary fuels introduced into the boiler or process heater.

(C) Gas stream volumetric flow rate and/or average flow rate shall be determined as specified in §63.488(e).

(D) Method 18 or Method 25A of 40 CFR part 60, Appendix A, shall be used to determine the concentration of organic HAP or TOC, as appropriate. The use of Method 25A shall comply with paragraphs (c)(1)(i)(D)(1) and (c)(1)(i)(D)(2) of this section.

(1) The organic HAP used as the calibration gas for Method 25A shall be the single organic HAP representing the largest percent by volume of the emissions.

(2) The use of Method 25A is acceptable if the response from the high-level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.

(ii) If an integrated sample is taken over the entire batch emission episode to determine TOC or average total organic HAP concentration, emissions per batch emission episode shall be calculated using Equations 18 and 19.

$$E_{\text{episode, inlet}} = K \left[ \sum_{j=1}^n (C_{j, \text{inlet}})(M_j) \right] (AFR_{\text{inlet}})(T_h) \quad [\text{Eq. 18}]$$

$$E_{\text{episode, outlet}} = K \left[ \sum_{j=1}^n (C_{j, \text{outlet}})(M_j) \right] (AFR_{\text{outlet}})(T_h) \quad [\text{Eq. 19}]$$

where:

$E_{\text{episode}}$ =Inlet or outlet emissions, kg/episode.

$K$ =Constant,  $2.494 \times 10^{-6} \text{ (ppmv)}^{-1} \text{ (gm-mole/scm)} \text{ (kg/gm)} \text{ (min/hr)}$ , where standard temperature is 20°C.

$C_j$ =Average inlet or outlet concentration of TOC or sample component  $j$  of the gas stream for the batch emission episode, dry basis, ppmv.

$M_j$ =Molecular weight of TOC or sample component  $j$  of the gas stream, gm/gm-mole.

$AFR$ =Average inlet or outlet flow rate of gas stream for the batch emission episode, dry basis, scmm.

$T_h$ =Hours/episode.

$n$ =Number of organic HAP in stream.

Note: Summation not required if TOC emissions are being estimated using a TOC concentration measured using Method 25A.

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(iii) If grab samples are taken to determine TOC or total organic HAP concentration, emissions shall be calculated according to paragraphs (c)(1)(iii)(A) and (c)(1)(iii)(B) of this section.

(A) For each measurement point, the emission rates shall be calculated using Equations 20 and 21.

$$E_{\text{point,inlet}} = K \left[ \sum_{j=1}^n C_j M_j \right] FR_{\text{inlet}} \quad [\text{Eq. 20}]$$

$$E_{\text{point,outlet}} = K \left[ \sum_{j=1}^n C_j M_j \right] FR_{\text{outlet}} \quad [\text{Eq. 21}]$$

where:

$E_{\text{point}}$ =Inlet or outlet emission rate for the measurement point, kg/hr.

$K$ =Constant,  $2.494 \times 10^{-6} \text{ (ppmv)}^{-1} \text{ (gm-mole/scm) (kg/gm) (min/hr)}$ , where standard temperature is 20°C.

$C_j$ =Inlet or outlet concentration of TOC or sample organic HAP component  $j$  of the gas stream, dry basis, ppmv.

$M_j$ =Molecular weight of TOC or sample organic HAP component  $j$  of the gas stream, gm/gm-mole.

$FR$ =Inlet or outlet flow rate of gas stream for the measurement point, dry basis, scmm.

$n$ =Number of organic HAP in stream.

NOTE: Summation not required if TOC emissions are being estimated using a TOC concentration measured using Method 25A.

(B) The emissions per batch emission episode shall be calculated using Equations 22 and 23.

$$E_{\text{episode,inlet}} = (\text{DUR}) \left[ \sum_{i=1}^n \frac{E_{\text{point,inlet},i}}{n} \right] \quad [\text{Eq. 22}]$$

$$E_{\text{episode,outlet}} = (\text{DUR}) \left[ \sum_{i=1}^n \frac{E_{\text{point,outlet},i}}{n} \right] \quad [\text{Eq. 23}]$$

where:

$E_{\text{episode}}$ =Inlet or outlet emissions, kg/episode.

$\text{DUR}$ =Duration of the batch emission episode, hr/episode.

$E_{\text{point},i}$ =Inlet or outlet emissions for measurement point  $i$ , kg/hr.

$n$ =Number of measurements.

(iv) The control efficiency for the control device shall be calculated using Equation 24.

$$R = \frac{\sum_{i=1}^n E_{\text{inlet},i} - \sum_{i=1}^n E_{\text{outlet},i}}{\sum_{i=1}^n E_{\text{inlet},i}} \quad (100) \quad [\text{Eq. 24}]$$

Where:

$R$ =Control efficiency of control device, percent.

$E_{\text{inlet},i}$ =Mass rate of TOC or total organic HAP for batch emission episode  $i$  at the inlet to the control device as calculated under paragraph (c)(1)(ii) or (c)(1)(iii) of this section, kg/hr.

$E_{\text{outlet},i}$ =Mass rate of TOC or total organic HAP for batch emission episode  $i$  at the outlet of the control device, as calculated under paragraph (c)(1)(ii) or (c)(1)(iii) of this section, kg/hr.

$n$ =Number of batch emission episodes in the batch cycle selected to be controlled.

(v) If the batch front-end process vent entering a boiler or process heater with a design capacity less than 44 megawatts is introduced with the combustion air or as a secondary fuel, the weight-percent reduction of total organic HAP or TOC across the device shall be determined by comparing the TOC or total organic HAP in all combusted batch front-end process vents and primary and secondary fuels with the TOC or total organic HAP exiting the combustion device, respectively.

(2) The percent reduction for the batch cycle shall be determined using Equation 25 and the control device efficiencies specified in paragraphs (c)(2)(i) through (c)(2)(iii) of this section. All information used to calculate the batch cycle percent reduction, includ-

ing a definition of the batch cycle identifying all batch emission episodes, must be recorded as specified in § 63.491(b)(2). This information shall include identification of those batch emission episodes, or portions thereof, selected for control.

$$\text{Percent Reduction} = \frac{\sum_{i=1}^n E_{\text{unc}} + \sum_{i=1}^n E_{\text{inlet,con}} - \sum_{i=1}^n (1-R)(E_{\text{inlet,con}})}{\sum_{i=1}^n E_{\text{unc}} + \sum_{i=1}^n E_{\text{inlet,con}}} 100 \quad [\text{Eq. 25}]$$

where:

$E_{\text{unc}}$ =Mass rate of TOC or total organic HAP for uncontrolled batch emission episode  $i$ , kg/hr.

$E_{\text{inlet,con}}$ =Mass rate of TOC or total organic HAP for controlled batch emission episode  $i$  at the inlet to the control device, kg/hr.

$R$ =Control efficiency of control device as specified in paragraphs (c)(2)(i) through (c)(2)(iii) of this section.

$n$ =Number of uncontrolled batch emission episodes, controlled batch emission episodes, and control devices. The value of  $n$  is not necessarily the same for these three items.

(i) If a performance test is required by paragraph (c) of this section, the control efficiency of the control device shall be as determined in paragraph (c)(1)(iv) of this section.

(ii) If a performance test is not required by paragraph (c) of this section for a combustion control device, as specified in paragraph (b) of this section, the control efficiency of the control device shall be 98 percent. The control efficiency for a flare shall be 98 percent.

(iii) If a performance test is not required by paragraph (c) of this section for a noncombustion control device, the control efficiency shall be determined by the owner or operator based on engineering assessment.

(d) *Batch process vent and aggregate batch vent stream testing for compliance with § 63.487(c) [halogenated emission streams].* An owner or operator controlling halogenated emissions in compli-

ance with § 63.487(c) shall conduct a performance test to determine compliance with the control efficiency specified in § 63.487(c)(1) or the emission limit specified in § 63.487(c)(2) for hydrogen halides and halogens.

(1) Sampling sites shall be located at the inlet and outlet of the scrubber or other control device used to reduce halogen emissions in complying with § 63.487(c)(1) or at the outlet of the control device used to reduce halogen emissions in complying with § 63.487(c)(2).

(2) The mass emissions of each hydrogen halide and halogen compound for the batch cycle or aggregate batch vent stream shall be calculated from the measured concentrations and the gas stream flow rate(s) determined by the procedures specified in paragraphs (d)(2)(i) and (d)(2)(ii) of this section, except as specified in paragraph (d)(5) of this section.

(i) Method 26 or Method 26A of 40 CFR part 60, appendix A, shall be used to determine the concentration, in Mg per dry scm, of total hydrogen halides and halogens present in the emissions stream.

(ii) Gas stream volumetric flow rate and/or average flow rate shall be determined as specified in § 63.488(e).

(3) To determine compliance with the percent reduction specified in § 63.487(c)(1), the mass emissions for any hydrogen halides and halogens present at the inlet of the scrubber or other control device shall be summed together. The mass emissions of any hydrogen halides or halogens present

at the outlet of the scrubber or other control device shall be summed together. Percent reduction shall be determined by subtracting the outlet mass emissions from the inlet mass emissions and then dividing the result by the inlet mass emissions.

(4) To determine compliance with the emission limit specified in § 63.487(c)(2), the annual mass emissions for any hydrogen halides and halogens present at the outlet of the control device and prior to any combustion device shall be summed together and compared to the emission limit specified in § 63.487(c)(2).

(5) The owner or operator may use any other method to demonstrate compliance if the method or data has been validated according to the applicable procedures of Method 301 of appendix A.

(e) *Aggregate batch vent stream testing for compliance with § 63.487(b)(2).* Owners or operators of aggregate batch vent streams complying with § 63.487(b)(2) shall conduct a performance test using the performance testing procedures for continuous front-end process vents in § 63.116(c) of subpart G. For the purposes of this subpart, when the provisions of § 63.116(c) specify that Method 18 shall be used, Method 18 or Method 25A may be used. The use of Method 25A shall comply with paragraphs (e)(1) and (e)(2) of this section.

(1) The organic HAP used as the calibration gas for Method 25A shall be the single organic HAP representing the largest percent by volume of the emissions.

(2) The use of Method 25A is acceptable if the response from the high-level calibration gas is at least 20 times the standard deviation of the response from the zero calibration gas when the instrument is zeroed on the most sensitive scale.

(f) *Batch cycle limitation.* The batch cycle limitation required by § 63.487(f)(1) and § 63.487(g)(1) shall be established as specified in paragraph (f)(1) of this section and shall include the elements specified in paragraph (f)(2) of this section.

(1) The batch cycle limitation shall be determined by the owner or operator such that annual emissions for the batch front-end process vent remain less than the level specified in

§ 63.488(d) when complying with § 63.487(g). Alternatively, when complying with § 63.487(f), the batch cycle limitation shall ensure that annual emissions remain at a level such that the batch front-end process vent remains a Group 2 batch front-end process vent, given the actual annual flow rate for that batch front-end process vent determined according to § 63.488(e)(3). The batch cycle limitation shall be determined using the same basis, as described in § 63.488(a)(1), used to make the group determination (i.e., expected mix of products or worst-case HAP emitting product). The establishment of the batch cycle limitation is not dependent upon any past production or activity level.

(i) If the expected mix of products serves as the basis for the batch cycle limitation, the batch cycle limitation shall be determined such that any foreseeable combination of products which the owner or operator desires the flexibility to manufacture shall be allowed. Combinations of products not accounted for in the documentation required by paragraph (f)(2)(iv) of this section shall not be allowed within the restrictions of the batch cycle limitation.

(ii) If, for a batch front-end process vent with more than one product, a single worst-case HAP emitting product serves as the basis for the batch cycle limitation, the batch cycle limitation shall be determined such that the maximum number of batch cycles the owner or operator desires the flexibility to accomplish, using the worst-case HAP emitting product and ensuring that the batch front-end process vent remains a Group 2 batch front-end process vent or that emissions remain less than the level specified in § 63.488(d), shall be allowed. This value shall be the total number of batch cycles allowed within the restrictions of the batch cycle limitation regardless of which products are manufactured.

(2) Documentation supporting the establishment of the batch cycle limitation shall include the information specified in paragraphs (f)(2)(i) through (f)(2)(v) of this section, as appropriate.

(i) Identification that the purpose of the batch cycle limitation is to comply with § 63.487(f)(1) or (g)(1).

(ii) Identification that the batch cycle limitation is based on a single worst-case HAP emitting product or on the expected mix of products for the batch front-end process vent as allowed under § 63.488(a)(1).

(iii) Definition of the operating year, for the purposes of determining compliance with the batch cycle limitation.

(iv) If the batch cycle limitation is based on a single worst-case HAP emitting product, documentation specified in § 63.488(a)(1)(ii) describing how the single product meets the requirements for worst-case HAP emitting product, as specified in § 63.488(a)(1) and the number of batch cycles allowed under the batch cycle limitation for each product associated with the batch front-end process vent are required.

(v) If the batch cycle limitation is based on the expected mix of products, the owner or operator shall provide documentation that describes as many scenarios for differing mixes of products (i.e., how many of each type of product) that the owner or operator desires the flexibility to accomplish. Alternatively, the owner or operator shall provide a description of the relationship among the mix of products that will allow a determination of compliance with the batch cycle limitation under an infinite number of scenarios. For example, if a batch process vent has two products, each product has the same flow rate and emits for the same amount of time, and product No. 1 has twice the emissions as product No. 2, the relationship describing an infinite number of scenarios would be that the owner or operator can accomplish two batch cycles of product No. 2 for each batch cycle of product No. 1 within the restriction of the batch cycle limitation.

**§ 63.491 Batch front-end process vents—recordkeeping requirements.**

(a) *Group determination records for batch front-end process vents.* Except as provided in paragraphs (a)(7) through (a)(9) of this section, each owner or operator of an affected source shall maintain the records specified in paragraphs (a)(1) through (a)(6) of this section for each batch front-end process vent subject to the group determination proce-

dures of § 63.488. Except for paragraph (a)(1) of this section, the records required to be maintained by this paragraph are limited to the information developed and used to make the group determination under § 63.488(b) through § 63.488(g), as appropriate. The information required by paragraph (a)(1) of this section is required for all batch front-end process vents subject to the group determination procedures of § 63.488. If an owner or operator did not need to develop certain information (e.g., annual average flow rate) to determine the group status, this paragraph does not require that additional information be developed.

(1) An identification of each unique product that has emissions from one or more batch emission episodes venting from the batch front-end process vent.

(2) A description of, and an emission estimate for, each batch emission episode, and the total emissions associated with one batch cycle for each unique product identified in paragraph (a)(1) of this section that was considered in making the group determination under § 63.488.

(3) Total annual uncontrolled TOC or organic HAP emissions, determined at the exit from the batch unit operation before any emission control, as determined in accordance with § 63.488(b).

(i) For Group 2 batch front-end process vents, emissions shall be determined at the batch cycle limitation.

(ii) For Group 1 batch front-end process vents, emissions shall be those used to determine the group status of the batch front-end process vent.

(4) The annual average flow rate for the batch front-end process vent as determined in accordance with § 63.488(e).

(5) The cutoff flow rate, determined in accordance with § 63.488(f).

(6) The results of the batch front-end process vent group determination, conducted in accordance with § 63.488(g).

(7) If a batch front-end process vent is in compliance with § 63.487(a) or § 63.487(b), and the control device is operating at all times when batch emission episodes are venting from the batch front-end process vent, none of the records in paragraphs (a)(1) through (a)(6) of this section are required.